

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

# EATON CORPORATION

Plaintiff )  
v. )  
ZF MERITOR LLC, )  
ARVINMERITOR, INC. and )  
ZF FRIEDRICHSHAFEN AG )  
Defendants )  
Case No. 03-74844 )  
Judge George Caram  
Steeh )  
Magistrate Judge R. Steven  
Whalen )

SPECIAL MASTER'S REPORT AND RECOMMENDATIONS ON  
PLAINTIFF'S AND DEFENDANTS' MOTIONS FOR SUMMARY  
JUDGMENT ON U.S. PATENTS 3,899,279; 5,664,458; & 5,624,350

February 22, 2007

1. By Order of Reference dated November 16, 2006, the Court referred to the Special Master six motions for summary judgment:

(a) U.S. Patent 3,899,279

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Non-Infringement

(b) U.S. Patent 5,664,458

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Invalidity and Partial Non-Infringement

(c) U. S. Patent 5,624,350

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Invalidity

2. (a) The asserted claims of these patents were construed by the Special Master in Reports and Recommendations dated August 14, 2006 and September 18, 2006 which were adopted by the Court by Orders dated November 14, 2006 and November 16, 2006.

(b) Oral argument was held on January 23, 2007. A transcript is available from counsel or the Special Master. At the parties' request, a first draft of this report was submitted to counsel for review and comments. Rule

53, Advisory Committee Notes, 2003 Amendments, Subdivision (f). The parties commented and replied to each others comments. Thereafter, a second draft was submitted to counsel. This final report takes into consideration all comments made by counsel.

## THE LAW

3. Summary judgment is appropriate in a patent case, like any other, when there are no genuine issues of material fact and the moving party is entitled to judgment as a matter of law. *Avia Group Int'l, Inv. v. L.A. Gear Calif., Inc.*, 853 F.2d 1557 (Fed.Cir.1988).

Determining patent infringement is a two-step process. First, the patent claim must be properly construed to determine its scope and meaning. Second, the claim as construed must be compared to the accused device or process. Patent infringement, literal or by equivalence, is a question of fact and must be proved by a preponderance of the evidence. *Markman v. Westview Instruments, Inc.* 52 F. 3d 967 (Fed.Cir.1995), *aff'd* 116 S.Ct. 1384 (1996). To prove literal infringement, the patentee must show that the accused device contains every limitation in the asserted claim. *WMS Gaming Inc v. Int'l Game Tech.*, 184 F.3d 1339 (Fed.Cir.1999). A device that contains an infringing mode of operation infringes even if that device also contains modes of operation that do not infringe. *Hilgraeve Corp. v. Symantec Corp.* 265 F. 3d 1336 (Fed.Cir. 2001).

Patents are presumed valid. 35 U.S.C. § 282. Invalidity for anticipation or obviousness must be established by clear and convincing

evidence. *Intellectual Prop. Dev. Inc. v. UA-Columbia Cablevision of Westchester Inc.* 336 F.3d 1308 (Fed.Cir. 2003). Invalidity for anticipation requires that each and every limitation of a claim, expressly or inherently, be found in a single prior art reference. *Schering Corp. v.. Geneva Pharm.*, 339 F. 3d 1373 (Fed.Cir. 2003). Summary judgment of patent invalidity is not appropriate when there are disputed material facts and when there is conflicting expert evidence requiring credibility determinations. *Teleflex, Incorporated and Technology Holding Company v. KSR International Co* (Fed.Cir. No. 04-1152 decided January 6, 2005) citing *Jones v. Hardy*, 727 F.2d 1524 (Fed.Cir. 1984).

#### PATENTS IN SUIT

##### The ‘279 patent

4. The ‘279 patent was the subject of an International Trade Commission (ITC) investigation No. 337-TA-503 (ITC 2004) in which the ITC construed claim 15. The ITC’s claim construction set out at ¶¶ 12 and 13 of the Special Master Report dated 8/14/06 has been adopted by the Court. Based on that claim construction, the ITC held that defendants’ accused product called “FreedomLine Transmission System” (also called Pak 5 version) literally infringes claim 15.

That holding followed a two-week trial before an Administrative Law Judge (ALJ) in which all parties here appeared and were represented by the same counsel as here. Furthermore, many if not all of the witnesses involved in the ITC case are involved here, by declaration, deposition or live

testimony during the claim construction proceedings. The full ITC decided not to review the ALJ's 225-page Recommended Determination, thus adopting it. Neither party appealed the ITC decision.

5. Based on the ITC ruling, plaintiff Eaton seeks summary judgment of literal infringement of claim 15 for defendants' importation and sale in the United States of defendants' "FreedomLine Transmission System". Though recognizing that the ITC determination is not binding on this Court, plaintiff contends that determination is entitled to "considerable weight" because (a) this Court has adopted the ITC's claim construction and (b) the ITC infringement determination is "premised on defendants' own testimony concerning the operation and structure of the FreedomLine system." Thus plaintiff contends summary judgment is appropriate because there are no "genuine issues of material fact" and the ITC properly applied the correct claim construction to establish literal infringement.

6. Defendants oppose summary judgment contending there are "genuine issues of material fact" and that plaintiff "has not proven and cannot prove infringement" on the ITC record. Defendants submit two declarations, along with excerpts from the ITC record to support their contentions that there are issues here "not litigated in the ITC" which "must be litigated" here. In essence, defendants contend that plaintiff has failed to establish through the ITC record that "each and every limitation of claim 15 is literally present in the . . . FreedomLine system."

7. The issues focus on the final paragraph of claim 15. Claim 15 and its construction are set out below with the last paragraph underlined for emphasis:

A control system for controlling a vehicular automatic mechanical transmission system utilized in connection with a vehicle equipped with vehicle wheel brakes for retarding the rotation of at least one of the vehicle drive wheels, said automatic mechanical transmission system comprising a throttle controlled engine, a change gear transmission having a plurality of gear ratio combinations selectively engageable between a transmission input shaft and the transmission output shaft, said transmission output shaft drivingly coupled to said vehicle drive wheels, and a disengageable coupling drivingly interposed said engine and said transmission input shaft, said automatic mechanical transmission system additionally comprising an information processing unit having [a] *means for receiving a plurality of input signals including (1) an input signal indicative of the rotational speed of said transmission output shaft*, said processing unit including [b] *means for processing said input signals in accordance with a program to provide a predetermined* [c] *gear ratio for a given combination of input signals and for generating command output signals whereby said transmission is operated in accordance with said program*, and [d] *means associated with said transmission system effective to actuate said transmission system to effect engagement of one of said gear ratios combinations in response to said output signals from said processing unit*, the system characterized by:

[e] means for sensing the presence of [f] wheel lock-up condition, and, if and as long as the presence of a wheel lock-up is sensed, [g] prohibiting said processing unit from generating all transmission [h] gear change command output signals.

8. The construction of phrases [e] through [h] above is set out below:

- [e] Construed function: “sensing the presence of a wheel lock-up condition”  
Corresponding structure: “the central processing unit 56 and either (1) an ABS system or (2) an algorithm dependent on the speed of the transmission output shaft”
- [f] “A wheel lock-up condition is also known as a skid and refers to the condition in which the vehicle is moving, but the wheels are not rotating at a speed representative of the vehicle speed”
- [g] Construed function: “preventing all signals from being produced by the processing unit that direct the transmission operators to cause a change in the gear ratio of the transmission”  
Corresponding structure: “the logic of the central processing unit”
- [h] “a signal from the processing unit that directs the transmission operators to cause a change in the gear ratio of the transmission”

(Special Master Rept. 8/14/06 at ¶¶ 12-13)

9. To understand the issues, it is desirable to review briefly the patented system as defined by claim 15. Ordinarily in a truck automatic transmission system, the rotational speed of the transmission output shaft indicates and is directly related to the truck’s ground speed. The processor in the truck’s transmission computer system thus makes gear shift decisions based on transmission output shaft rotational speed. (‘279 patent, Col. 1, ll. 27-42).

A so-called “wheel lock-up condition” can occur when a truck’s brakes are applied and one or more wheels lose their grip on the road surface

and stop rotating while the truck continues to move (or skid) down the road, sometimes at significant speeds. This condition can cause the truck's transmission control system to believe that the truck has purposely slowed down and thus cause the system to downshift to a gear which in fact is inappropriate to how fast the truck is actually moving. This could cause the driver to lose control of the truck. (Special Master Rept. 8/14/06 at ¶8)

The solution to this problem is the subject of the '279 patent, viz. to prohibit the transmission from downshifting during wheel lock-up (and skidding). Claim 15 defines a system by which the clutch is "disengaged" and all "gear change operations" cease if a "wheel lock-up" condition is "sensed" until such time that the wheel lock-up is terminated. (Special Master Rept. 8/14/06 at ¶9). Specifically, as set out in the last paragraph of claim 15, if a wheel lock-up is "sensed", the "processing unit" is "prohibited" from generating all transmission gear change control output signals.

10. The parties' dispute centers on the meaning of "all".

(i) Defendants contend that in the accused FreedomLine system, not all gear change command signals are "prohibited" in the event of a lock-up. In particular, defendants contend that the FreedomLine system permits "starting gear shifts during a wheel lock-up condition." Defendants further contend that the ITC decision on infringement "did not address starting gear shifts" during a "lock-up condition"; that this issue was not litigated in the ITC; and such issue raises a "disputed issue of fact"

(ii) Plaintiff disagrees on two grounds. First, plaintiff contends that “starting gear shifts” do not occur during “lock-up conditions”, noting that lock-ups or skids only occur when the truck “wheels are not rotating at a speed representative of vehicle speed” ([f] in claim 15, ¶ 8 above). “Starting gear shifts” on the other hand occur when the vehicle is stopped or at reduced slow speeds when the output shaft rotational speed represents the truck speed, i.e. not a lock-up situation. (‘279 patent, col. 6, ll. 9-15). Thus plaintiff contends that the ITC record supports the finding that all gear shift commands during lock-up situations are “prohibited” by claim 15 and that there is no genuine issue of material fact that FreedomLine transmissions, in permitting “starting gear shifts,” are not permitting shifts during a “lock-up condition”. In short, plaintiff contends that it is “irrelevant” that FreedomLine permits “starting gear shifts” because such shifts are not included in the prohibited “all” “commands” within the meaning of claim 15, sub clause [g].

Second, plaintiff contends that in any event, defendants made the “same argument” in the ITC regarding “starting gear shifts” and was held to infringe despite FreedomLine’s ability to make “standstill [starting gear] shifts”. Thus, argues plaintiff, the issue is not new and was resolved against defendants in the ITC.

11. Based on review of the ITC record and the parties’ submissions herein, the Special Master finds as follows in ¶¶ 12 – 16.

12. Regarding infringement of claim 15 by FreedomLine transmissions, the ITC held that if the Freedomline system is operating in the

fully automatic mode and the ABS [anti-lock braking system] is active, the automatic drive program of FreedomLine will not request any shifts. In normal operations, vehicles with FreedomLine transmissions operate in the fully automatic mode about 90% of the time.

Further, the ITC held that claim 15 is practiced when an automated transmission control system senses an active signal from an anti-lock brake system and thereafter prohibits the transmission's processor from generating any gear change command signals. It was undisputed in the ITC that 90% of the time FreedomLine transmissions operate in fully automatic mode, where gear change command signals are blocked when the anti-lock system is active. Hence the ALJ held that Eaton had established, by a preponderance of the evidence, that defendants' FreedomLine transmissions practice the system of claim 15. (ITC Final and Recommended Determinations, Jan. 7, 2005 at 152). Exhibit 8, pp. 10-11; Exhibit 7 ¶¶ 7-8 and 11 to Plaintiff's Brief, support the ITC's holding (testimony of Mr. Sayman, defendants' Senior Product Engineer, and Dr. Caulfield, plaintiff's expert).

13. "Starting gear shifts" are shifts to a "launch gear" when the transmission output shaft (or vehicle) is stopped or moving at a slow reduced speed. Defs. Exhibit A at ¶ 13; Exhibit B at ¶ 23; Exhibit C at p. 3733, lines 6-23. At such time, output shaft rotational speed indicates and represents a vehicle's ground speed and there is no "lock-up condition" within the meaning of claim 15. Thus, "starting gear shifts" are not shifts which are "prohibited" within the meaning of claim 15. (Plaintiff's Reply Brief, Ex. 9, p. 3977-8).

14. During an ITC hearing on Oct. 6, 2005, defendants through their Mr. Sayman represented that FreedomLine transmissions held by the ITC to be infringements of claim 15 were capable of making “standstill [starting gear] shifts” and that the “same argument” regarding “standstill shifts” was made earlier in the ITC. The inference plaintiff seeks to have drawn is that the ITC held infringement despite being aware of such capability. (Plaintiff’s Reply Brief, Ex. 10 p. 3543, lines 15-25) Such inference is reasonable.

15. Shortly after the ITC held infringement of claim 15 by the FreedomLine transmission, defendants redesigned the transmission in an effort to avoid further infringement. The redesign called Pak 6 version was thereafter litigated in the ITC which held no infringement. Senior representatives of defendants stated publicly at the time that the redesign was done to avoid infringement of a single claim (claim 15) of an Eaton patent. (Plaintiff’s Brief, Ex. 1)

16. Other than “starting gear shifts” considerations addressed above in ¶ 13 which the Special Master has rejected, defendants raise no other substantial or material challenges to the ITC holding of infringement of claim 15. Accordingly, the ITC holding of literal infringement of claim 15 stands materially unchallenged; there are no genuine issues of material fact in dispute; and summary judgment of literal infringement of claim 15 here is justified.

17. After the ITC held that defendants’ original FreedomLine transmission (Pac 5 version) infringed claim 15 of the ‘279 patent and entered an exclusion order, defendants redesigned the transmission in an

effort to avoid infringement. The redesigned transmission, called Pac 6 version, became the subject of further ITC proceedings resulting in a holding of non-infringement. (ALJ Enforcement Initial Determination and Initial Advisory Opinion, Jan. 10, 2006). Such Determination ultimately became final and was not appealed.

18. In the further proceedings in the ITC on the redesigned product, defendants admitted that such product met all the limitations of claim 15 except for the “all” limitation in the final clause, as discussed above in ¶¶ 7-13. After considering new evidence on the redesign, the ALJ concluded that the “redesigned product does not literally infringe claim 15 of the ‘279 patent in issue since the product does not prohibit the ‘processing unit from generating all transmission gear change command output signal’ “. (ALJ Determination at 23). The ALJ found that “witnesses for [plaintiff Eaton] have admitted that downshifts can occur during an ABS event, and that downshift occurs during a wheel lock-up event.” Further, the ALJ found that there was “evidence that upshifts were permitted during a wheel lock-up condition.” Noting that “a product needs to prevent all gear shift changes in response to sensing a wheel lock-up situation to infringe claim 15 of the ‘279 patent” the ALJ concluded no literal infringement. (ALJ Determination at 20-23)

19. Furthermore with regard to the redesigned product, plaintiff Eaton argued before the ITC that there was infringement of claim 15 under the “doctrine of equivalents” because the redesigned product performed “substantially the same function, way and result as claim 15”. Defendants responded that to find “equivalence” here would in effect “read the word

‘all’ out of claim 15”, contrary to established Supreme Court and Federal Circuit law regarding the “all elements” rule. The ALJ agreed holding that “the ‘all elements’ rule provides that the doctrine of equivalents does not apply if applying the doctrine would vitiate an existing claim element” citing *Warner Jenkinson Co. v Hilton Davis Co.*, 117 S. Ct. 1040 (1997) and *Freedman Seating Co. v. American Seating Co.* 420 F. 3d 1350 (Fed.Cir. 2005) (ALJ Determination at 25). I.e. reading “all” out of the claims, as sought by plaintiff, would violate the “all elements” rule by vitiating an entire claim element.

In addition, the ALJ held that the redesigned product did not meet the traditional test of equivalence, viz. substantial similarity of function, way and result. The ALJ held there were “substantial differences” in function, way and result, thus avoiding infringement. In sum, the ALJ concluded that the “redesigned product does not infringe claim 15 of the ‘279 patent in issue under the doctrine of equivalents because there are more than insubstantial differences and the ‘all elements’ rule has not been satisfied.” (ALJ Determination at 24-25)

20. In this Court, defendants move for summary judgment of non-infringement of claim 15, either literally or by equivalence, by the redesigned product. Based on the ITC record, defendants contend that the same claim construction is applied here as in the ITC; that the ITC holding was not appealed; and that the facts established in the ITC support the “correctness of the ruling”. Defendants make the same non-infringement arguments with respect to claims 7 and 8 which, though not considered by

the ITC, contain the same “all” limitation as claim 15 and thus should follow claim 15.

Plaintiff opposes summary judgment and argues (1) that defendants “ignore” the Special Master’s claim construction of “wheel lock-up condition” which renders defendants’ “non-infringement arguments moot” and (2) that defendants’ motion “fails to address several material facts concerning the operation of FreedomLine in various modes” which “material facts” preclude summary judgment.

21. The Special Master rejects plaintiff’s arguments and finds that summary judgment of non-infringement of claim 15 by defendants’ redesigned product is justified. As for plaintiff’s point (1), the ITC and Special Master apply the same claim construction. Thus, defendants’ non-infringement arguments based on claim construction are not “moot”. As for plaintiff’s point (2), plaintiff relies only on evidence which was before the ITC and considered by that body in its extensive trials of both the original and redesigned FreedomLine products. Plaintiff in essence seeks a retrial on the ITC record which the Special Master rejects.

22. Claims 1 and 3 of the ‘279 patent asserted by plaintiff were not before the ITC. Defendants seek summary judgment of non-infringement of those claims contending that two limitations thereof, viz. the “immediately disengaged” limitation and the “skid [or lock-up] termination” limitation are “not present in the redesigned FreedomLine system”. Defendants rely on declarations of expert and fact witnesses to support their non-infringement arguments as well as certain prior art and prosecution history considerations.

Defendants also rely on a document from plaintiff's files which purports to show that plaintiff's in-house counsel conducted an investigation prior to filing litigation against defendants which concluded that "claim 1 is not infringed".

For its part, plaintiff points to expert and fact evidence which it contends shows that "immediately disengaged" and "skid termination" limitations are present in the redesigned product.

23. The Special Master finds that summary judgment of non-infringement of claims 1 and 3 of the '279 patent is not appropriate. There is genuine dispute between the parties' fact and expert witnesses whether the redesigned product has structure which meets the "immediately disengaged" and "skid [or lock-up] termination" limitations of claim 1.

Further, plaintiff's counsel's pre-litigation conclusion of non-infringement, while entitled to consideration, is not determinative and must be considered in the context of other evidence.

#### The '458 patent

24. Plaintiff moves for summary judgment of literal infringement of all asserted claims, viz. claims 1 and 12 (independent claims) and claims 3-6 and 14-17 (respectively, dependent on claims 1 and 12) by defendants' ZF SureShift lever embodiment of its FreedomLine transmission. Plaintiff contends that based on the Court's claim construction and evidence of defendants' experts (Dr. Gregory V. Davis and Dr. Douglass Locke),

defendants' fact witness (Robert Sayman) and plaintiff's expert (Dr. Edward M. Caulfield), there are no disputed fact issues and infringement is established as a matter of law. Defendants oppose contending there are "disputed issues of material fact" as well as "mischaracterizations" of the accused FreedomLine system.

Furthermore, defendants move (1) for summary judgment of invalidity of the asserted claims under 35 U.S.C. §§102 and 103 (anticipation and obviousness) and (2) for partial summary judgment of non-infringement of another of defendants' FreedomLine embodiments called SmartShift. Plaintiff opposes both motions on grounds of material fact disputes.

25. Turning first to plaintiff's motion for summary judgment of infringement by SureShift, Dr. Locke and Mr. Sayman, defendants' Senior Product Engineer, both testified by deposition in this case and Dr. Davis submitted an expert declaration incorporating testimony of both Locke and Sayman. Plaintiff contends that Dr. Davis' declaration (taken together with the Locke and Sayman testimony), Dr. Caulfield's declaration and the Court's claim construction leave no material facts in dispute and that summary judgment of infringement "is now appropriate". The Special Master agrees and makes the following findings in ¶¶ 26-29 below.

26. There is no dispute that the accused SureShift product meets all limitations of the preamble of claim 1 which is set out at ¶18 of Special Master Report dated 8/14/06.

27. As for the body of claim 1 and its three clauses, viz. “determining currently engaged transmission ratio”; “determining current vehicle speed”; and “if the transmission is in neutral . . . determined as a factor of current vehicle speed,” the evidence from defendants’ own witnesses (cited specifically in plaintiff’s brief at pp. 7-11) establishes that the SureShift meets the claim limitations. Therefore, literal infringement of method claim 1 (as well as counterpart apparatus claim 12) is established.

28. Defendants’ principal arguments against infringement of claim 1, as understood, raise prior art considerations which are misplaced and rejected.

29. Regarding dependent claims 3-6 and 14-17, as those claims are construed in ¶23 in Special Master Report dated 8/14/06, they are infringed based on Dr. Caulfield’s declaration at pp. 22-23 (cited specifically in plaintiff’s brief at 11-12). Those claims relate to the “approximate rolling start gear ratio selected” for a rolling start situation and setout “specific numerical ratios, i.e. engine speed divided by output shaft speed as set out in each particular claim.” Dr. Caulfield’s declaration is based on actual test data of the accused system, which data is not challenged by defendants. The data as explained by Dr. Caulfield establishes that the claimed ratios “are met” by such “test data”. Defendants provide no contrary data.

Further, defendants specifically challenge claims 5-6 and 16-17 arguing that their claim language “substantially equal to”, referring to ratios, is not met by the accused device. (Claims 5 and 6 differ from claims 4 and 3, respectively, in using the phrase “substantially equal to” rather than “equal

to” in referring to “gear ratio”. Claims 16 and 17 bear the same relationship respectively to claims 15 and 14).

Defendants’ argument is rejected. The commonly-employed claim phrase “substantially equal to” impacts the breadth of the claim and is used here, plaintiff contends, “for the very purpose of allowing the claims to cover situations that were not exactly equal”. While the “substantiality” of differences between a claimed invention and an accused device often raises fact issues of infringement (*e.g. Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc et al* 424 F.3d 1293, 1316 (Fed.Cir. 2005)) defendants have presented no evidence or persuasive reasons why, in the context of the invention and claims here, the ratio differences are material to deciding infringement. Dr. Davis’ “detailed analysis of the test data” upon which defendants rely fails to do so. E.g. Dr. Davis’ assertion that the “ratio selected by the FreedomLine (2.7:1) differs from the claimed ratios (1.4:1 and 1.1:1)” does not, without more (e.g. prosecution history or prior art considerations), explain why those ratio differences are material to deciding infringement.

30. Turning next to defendants’ motion for summary judgment of invalidity of the asserted claims of ‘458 under 35 U.S.C. §§102 and 103 (anticipation and obviousness), defendants assert invalidity “in light of at least three prior art references that were not considered by the United States Patent Office prior to issuance of the ‘458 patent.” In support of the motion, defendants rely on the declaration of Dr. Davis, excerpts from a deposition of Dr. Caulfield and materials from a European patent file history. Dr. Davis’ declaration includes an analysis of the ‘458 patent and the “key prior

art references” above noted. Dr. Davis concludes invalidity under 35 U.S.C. §102 and/or § 103.

Plaintiff opposes and relies on the declaration of Dr. Caulfield, excerpts from Dr. Caulfield’s deposition and excerpts from the deposition of Dr. Locke.

It is unnecessary to discuss the submitted evidence in detail. Suffice it to say that Dr. Caulfield disagrees with all of Dr. Davis’ conclusions on validity, believing that all the asserted claims of the ‘458 patent are “valid”. The respective declarations and related evidence raise material fact disputes. Summary judgment is not appropriate.

31. Turning last to defendants’ motion for partial summary judgment of non-infringement of defendants’ FreedomLine embodiment called SmartShift, defendants contend the SmartShift does not infringe because it “does not include Step (3)(a) of independent claim 1 (or the corresponding logic rules of independent claim 12)”, hence no literal infringement or infringement by equivalence. Defendants rely on Dr. Davis’ report noted above as well as excerpts from the deposition of Klaus Wohr, a Rule 30(b)(6) witness for defendants and excerpts from the deposition of Keith Wright, an engineer with plaintiff Eaton.

Plaintiff does not deny that there is no literal infringement. Therefore summary judgment of no literal infringement is appropriate. However, plaintiff opposes summary judgment of no infringement by equivalence, based on deposition testimony and a declaration of its expert Dr. Caulfield.

Such evidence, though sparse and arguably conclusory (*Texas Instruments Incorporated v. Cypress Semiconductor Corporation et al* 90 F.3d 1558, 1555-1569 (Fed.Cir. 1996)) nevertheless raises disputed material fact issues with Dr. Davis' declaration on the same subject about the "substantiality" of the differences between the claimed structure and the accused structure. Accordingly, defendants' motion for summary judgment of no infringement by equivalents is not appropriate.

#### The '350 patent

32. Plaintiff moves for summary judgment of literal infringement of claims 1, 2, 8 and 9 of the '350 patent. Plaintiff contends that earlier resolution of claim construction issues coupled with "no material fact disputes as to the operation of the accused products" makes summary judgment appropriate. Defendants disagree based on asserted "disputed facts, omissions of other material facts and mischaracterizations of the operation of the FreedomLine transmissions systems".

In particular, defendants contend that plaintiff cannot prove

- (1) that the FreedomLine system "operates to determine both touch point and approach point" within the meaning of the claims, and
- (2) that the FreedomLine system operates to cause "the clutch to assume and remain at an approach point while awaiting a clutch engagement command" within the meaning of the claims.

33. Claims 1 and 8, the independent claims, are set out below:

Claim 1. A method for controlling an automated vehicular master-friction clutch (16) drivingly interposed between an engine (14) and an input shaft (52) of a multiple-speed transmission (12), said clutch having an *approach point condition*, said method characterized by:

determining a value (AP) of a clutch control parameter indicative of said clutch being at the *approach point condition*; and

(b) *after disengaging said clutch and while awaiting a clutch engagement command, causing said clutch to assume and remain in the approach point condition thereof.*

Claim 8. A method for controlling an automated vehicular master-friction clutch (16) drivingly interposed between an engine (14) and an input shaft (52) of a multiple-speed transmission (12), said clutch having a *touch point condition* and an *approach point condition*, said method characterized by:

(a) *determining a first value (TP) of a clutch control parameter indicative of said clutch being at the touch point condition thereof;*

(b) *determining a second value (AP) of said clutch control parameter indicative of said clutch being at the approach point condition thereof; and*

(c) *after disengaging said clutch and while awaiting a clutch engagement command, causing said clutch to assume and remain in the approach point condition thereof.*

(Special Master Rept. 9/18/06 at ¶ 10)

The claim construction issues centered on the meaning of “touch point” “touch point condition”, “approach point” and “approach point condition”. “Touch point” was construed to mean “a point of incipient engagement of the clutch and requires some minimum amount of torque transfer across the clutch.” “Approach point” means “a point intermediate full disengagement and the touch point, preferably about to the touch point”.

(Special Master Rept. 9/18/06 at ¶ 12)

34. With respect to issue (1) in ¶ 32 above, defendants contend that the FreedomLine system does not “determine touch points and approach points” as described and claimed in the ‘350 patent. In particular, “touch point” is the “point of incipient engagement of the clutch [with the input transmission shaft] and “requires some minimum amount of torque transfer across the clutch”. Defendants contend that at the point of initial engagement between the clutch and input transmission shaft in FreedomLine, called the Mitnahmepunkt or MIT point, a “significant” rather than ”minimal” amount of torque is transferred, viz. “enough torque to spin the transmission input shaft up to 400 rpm, which is two thirds of engine idle speed”. Defendants argue that such “significant” torque transfer is not “minimal” torque transfer within the meaning of the claim and that the Mitnahmepunkt point therefore is not a “touch point.” Plaintiff, on the other hand, contends that MIT is a “touch point” because it is a point of “initial torque transfer” and a point of “minimal amount of torque.” Furthermore, plaintiff agrees that “more than a minimal [amount of torque transfer]” is outside the scope of the claims. (Hearing Tr. 145)

The evidence shows that the MIT point is a point of “initial torque transfer . . . as a result of which the transmission input shaft is accelerated.” (emphasis supplied) (Ex. 3 at ZFM 086502) Plaintiff does not dispute this evidence. Defendants thus contend that such “acceleration”, up to 400 rpm, is the result of “significant”, not “minimal”, torque transfer and therefore MIT is not a “touch point.” Plaintiff agrees that “the claimed ‘touch point’ must be a point of ‘incipient engagement’ and therefore cannot be a point that transfers large amounts of torque”. (Pl. Comments to Sp. Master Draft Report 2/9/07 at 5) Furthermore plaintiff does not dispute defendants’

contention that shaft acceleration occurs up to 400 rpm but offers no explanation how such can occur with minimal, rather than significant or substantial torque. (Hearing Tr. 134) Plaintiff also contends that tests it conducted (not in this record) show that the MIT point has “10 pounds of torque” which is “a minimal amount, exactly as in the [‘350] patent.” (Hearing Tr. 146) Defendants dispute those tests, both the way conducted and the results. (Hearing Tr. 150-1)

The short of it is that there are material fact disputes whether MIT is a “touch point” within the meaning of the claims. Accordingly on this record plaintiff has failed to establish that MIT is a “touch point”.

Defendants further contend that without a “touch point”, FreedomLine cannot have an “approach point” because “approach point” is defined with reference to “touch point” i.e. a “point intermediate full disengagement and touch point”. Defendants do not dispute that another point in the FreedomLine system, the Anlegepunkt point, is located “at a 7 mm offset from Mitnahmepunkt toward clutch disengagement” (Dr. Davis declar. 11/5/06 at ¶ 15). It is thus a “point intermediate full disengagement and the touch point, preferably about to touch point.” However defendants correctly argue that it cannot be an “approach point” within the meaning of the claims because there is no established “touch point”. Plaintiff’s expert Dr. Caulfield made clear in his declarations and testimony on claim construction that, within the meaning of the claims, there is no “approach point” without a “touch point”. (Defendants’ Opposition Brief at 10-11). Dr. Caulfield stated “if a touch point is not determined, the approach point necessarily cannot be determined” (Caulfield Rebuttal rept. at p. 5)

35. With respect to issue (2) in ¶ 32 above, defendants deny (as noted above in ¶ 34) that the FreedomLine system has an “approach point.” However even assuming (as defendants do for argument purposes) that FreedomLine has an “approach point,” (the Anlegepunkt point), defendants contend that the claims are not met because during gear changing in FreedomLine, the clutch is not programmed to “assume and reside at an approach point while awaiting a clutch engagement command” within the meaning of the claims.

To explain, in the ‘350 system, when the clutch is disengaged with the expectation of a new gear engagement, the clutch moves to and dwells at the approach point (between fully disengaged and touch point) while it awaits a command to start a new clutch engagement. Thereafter upon a command to engage the clutch, the clutch moves quickly from the approach point where it has been residing to the touch point and thereafter, in modulated movement, to full engagement with the input shaft. (‘350 patent, col. 1, ll. 48-54; col. 4, ll.39-58; col. 5, ll. 14-26 and 50-60). Hence the claim language at claim 1 (b) and claim 8 (c).

The FreedomLine system operates differently, according to defendants, with respect to clutch position and movement, and engagement command sequence. When the clutch disengages in preparation for a gear change, the clutch moves to fully disengaged position (Ruhepunkt) where it stays until a new clutch engagement command is received. It does not move to and reside at another point (such as an approach point) prior to a new engagement command. After the new engagement command, the clutch moves uninterrupted toward engagement with the input shaft, unless lack of

synchronization between the engine and input shaft speeds is detected in which event the clutch holds at the Angelepunkt point (approach point) until synchronization is achieved. Thereafter, the clutch continues to move on toward the touch point and finally to modulated closure with the input shaft. ( Davis declar. 11/5/02 at ¶ 16).

36. Thus defendants contend that the above-noted operation of FreedomLine does not respond to the claims' requirement that the clutch "assumes and remains" in "approach point condition" "while awaiting a clutch engagement command". Rather the clutch "awaits" an "engagement command" while it "remains" fully disengaged at Ruhepunkt and then moves, never having "assumed" and "remained" at Angelepunkt, the approach point, awaiting an engagement command. (Davis declar. at ¶¶ 16 and 27).

37. Plaintiff disagrees with defendants regarding operation of Freedomline. Plaintiff's expert, Dr. Caulfield, explains that when the clutch disengages in anticipation and preparation for a gear change, the clutch moves first to the fully disengaged position Ruhepunkt. Thereafter, "depending on the mode of operation", the "algorithm will either cause the clutch to dwell at the . . . [fully disengaged Ruhepunkt] position, or at the . . . [Angelepunkt] position that is closer to the . . . [Mitnahmepunkt position, touch point]" (Emphasis supplied). Then as the clutch is engaged (upon engagement command), it moves from either the Ruhepunkt position or the Angelepunkt position, whereat it was dwelling, toward engagement with Mitnahmepunkt, the touch point. (Caulfield rept. 3/3/06 at 18)

38. Thus the parties disagree about the operation of FreedomLine in ways material to deciding infringement, viz. whether the clutch “assumes and remains in an approach point condition” “while awaiting a clutch engagement command” which is one mode of operation according to plaintiff (Caulfield rept. 3/3/06 at 18) but not defendants (Davis declar. 11/5/02 at ¶27)

In sum, summary judgment of literal infringement of claims 1, 2, 8 and 9 is not appropriate for reasons set out in ¶¶ 32-37.

39. Defendants move for summary judgment of invalidity of claims 1-3, 5-6, and 8-9 of the ‘350 patent under 35 U.S.C. §§102 (anticipation) and 103 (obviousness). Defendants rely of four prior art references, a declaration of Dr. Davis dated November 9, 2006 and claim charts comparing the elements of the claims to each of the references which charts purport to show that each element is taught in each reference, literally or inherently, as required to prove anticipation. *Schering, supra*. Defendants contend that the “broad claim construction sought by plaintiffs” and adopted by the Court subjects the claims to “further validity scrutiny under . . . 35 U.S.C. §§102 and 103” and that such scrutiny results in invalidity. (Special Master Rept. 9/18/06 at ¶13)

Plaintiff opposes summary judgment, relying on the reports of Dr. Caulfield dated March 3 and 31, 2006, prior to the claim construction.

40. (a) The prior art references relied on by defendants are

U.S. Patent 4,899,858 (“Cote”)

U.S. Patent 4,899,857 (“Tateno”)

Published Japanese Patent Application

1-233127 (“Nakadani”)

SAE Technical Paper No. 84005 (“Watanabe”)

There is no dispute that each reference is statutory prior art under 35 U.S.C §102 (b).

(b) Before considering each of the references separately, it is helpful to describe them in general.

The references all teach methods for controlling an automated vehicle clutch. The clutch is positioned (conventionally) between the engine and the input shaft of a transmission. The references all have in common (with the ‘350 patent and among themselves) the goal of shortening the time it takes to move the clutch from a position where the clutch is fully disengaged from the shaft to the position where the clutch is fully engaged with the shaft. The references all teach doing so essentially in two steps. The first step is to move the clutch to a position short of, but very near, contact with the shaft. The second step is to move the clutch, upon command, into contact with the shaft whereby torque begins to be transferred. Thereafter, the clutch continues to move into further contact with the shaft, the movement being modulated, i.e. controlled, to bring about further engagement with the shaft up to full engagement and thus full torque transfer.

Defendants contend that the two-step sequence above described is exactly what is done in the ‘350 patent method wherein the clutch first moves to an “approach point condition” followed by movement, on

command, to a “touch point condition.” Defendants recognize that the prior art references do not describe their methods and sequences in literal terms of “approach point” and “touch point” but contend that in substance the reference teachings meet the ‘350 claims, as those claims are construed by the Court, thus rendering the claims invalid as anticipated. Each reference will now be considered in turn.

41. ‘858 (“*Cote*”) *Cote* is an Eaton patent and is cited as a prior art reference in the ‘350 patent. (‘350 patent, front page, listed under “References Cited”). Defendants, recognizing that the USPTO cited *Cote* in the prosecution of ‘350, nevertheless notes correctly that “a patent may be found to be anticipated on the basis of a reference . . . [cited by the USPTO] at the time of issuance,” citing *IPXL Holdings, L.L.C. v. Amazon.com, Inc.* 430 F. 3d 1377 (Fed.Cir. 2005). Defendants assert invalidity of claims 1, 5 and 8 as anticipated by *Cote*.

42. Dr. Davis’ declaration and the claim charts, along with a color-annotated figure in defendants’ brief at p.7, identify in *Cote* teachings which they contend to be a “touch point” and an “approach point” and how they are determined, within the meaning of the claims. Defendants also identify in *Cote* a teaching of the operation of the clutch which they contend responds to the claims’ requirement for “disengaging” the clutch, followed by the clutch assuming and remaining “in the approach point condition” while “awaiting a clutch engagement command”.

Plaintiff’s response, based on Dr. Caulfield’s 3/31/06 report, is that *Cote* teaches nothing “more relevant” than the prior art considered by the

patent examiner and that Cote does not “teach or suggest anything regarding an approach point or dwelling at an approach point.” Plaintiff contends that defendants in the claim charts confuse “the teachings of touch point with approach point” and that Cote “only teaches determining a touch point, not an approach point.” Plaintiff also points out that Cote was “incorporated by reference” in the ‘350 patent specification, noting the presumption of validity of patents under 35 U.S.C. §282.

Summary judgment of invalidity is not appropriate. There are material fact disputes about whether the “points” in Cote alleged by defendants to be “touch” and “approach” points are such points within the meaning of the claims. *I.e.* whether the point in Cote alleged to be a “touch” point is a point of “incipient engagement” and “minimal” torque transfer; and whether the point in Cote alleged to be an “approach” point is “intermediate” a properly-found “touch point” and full clutch disengagement. Thus invalidity is not established on this record by clear and convincing evidence.

43. ‘857 patent (“*Tateno*”) Tateno was not cited by the USPTO during prosecution of the ‘350 patent. Defendants assert invalidity of claims 1, 5 and 8 as anticipated by Tateno.

Dr. Davis’ declaration and the claim charts, along with a color-annotated figure in defendants’ brief at p. 8 illustrating the Tateno method, identify in Tateno what they contend to be a “touch point” and an “approach point” and how they are determined, within the meaning of the claims. Defendants also identify in Tateno the operation of the clutch which

responds to the claims' requirement of "disengaging" the clutch, followed by assuming and remaining in the "approach point condition" while "awaiting a clutch engagement command."

Plaintiff's response, based on Dr. Caulfield's 3/31/06 report, is that Tateno does not disclose "determining" or "dwelling at" an approach point "as defined" in the '350 patent; Tateno does not teach a "touch point condition" like '350 because the asserted "touch point" in Tateno is "a point at which "significant driving torque is transmitted" (rather than "minimal" torque); and that other prior art cited by the examiner is more "pertinent" than Tateno.

Summary judgment is not appropriate. There are material fact disputes about whether the "points" in Tateno alleged by defendants to be "touch" and "approach" points are such points within the meaning of the claims. *I.e.* whether the point in Tateno alleged to be a "touch" point is a point of "incipient engagement" and "minimal" torque transfer; and whether the point in Tateno alleged to be an "approach" point is "intermediate" a properly-found "touch point" and full clutch disengagement. Furthermore there is dispute whether in Tateno there is "determining" or "dwelling at" the "approach point", within the meaning of the claims. Thus invalidity is not established on this record by clear and convincing evidence.

#### *44. Published Japanese Patent Application 1-233127 ("Nakadani")*

Nakadani was not cited by the USPTO during prosecution of the '350 patent. Defendants assert invalidity of claims 1, 5 and 8 as anticipated by Nakadani.

Dr. Davis' declaration and claim charts, along with a color-coded figure in defendants' brief at p.10 illustrating the Nakadani method, identify in Nakadani what they contend to be a "touch point" and an "approach point" and how they are determined, within the meaning of the claims. Defendants also identify in Nakadani the operation of the clutch which responds to the claims' requirement of "disengaging" the clutch, followed by assuming and remaining in the "approach point condition" while "awaiting a clutch engagement command."

Plaintiff's response, based on Dr. Caulfield's 3/31/06 report, is that Nakadani does not disclose a "touch point condition or how a touch point condition would be calibrated"; that there is no disclosure of an "approach point condition between a touch point condition and a fully disengaged point"; and that Nakadani is "less relevant" than "prior art cited by the applicant" of the '350 patent and "considered by the Examiner".

Summary judgment is not appropriate. There are material fact disputes about whether the "points" in Nakadani alleged by defendants to be "touch" and "approach" points are such points within the meaning of the claims *I.e.* whether the point in Nakadani alleged to be a "touch" point is a point of "incipient engagement" and "minimal" torque transfer; and whether the point in Nakadani alleged to be an "approach" point is "intermediate" a properly-found "touch point" and full clutch disengagement. Thus invalidity is not established on this record by clear and convincing evidence.

45. *SAE Technical Paper No. 84005* (“*Watanabe*”) *Watanabe* was not cited by the USPTO during prosecution of the ‘350 patent. Defendants assert invalidity of claims 1, 5 and 8 as anticipated by *Watanabe*.

Dr. Davis’ declaration and the claim charts, along with color-annotated figures in defendants’ brief at pp. 12-13 illustrating the *Watanabe* method, identify in *Watanabe* what they contend to be a “touch point” and an “approach point” and how they are determined within the meaning of the claims. Defendants also identify in *Watanabe* the operation of the clutch which responds to the claims’ requirement of “disengaging” the clutch, followed by assuming and remaining in the “approach point condition” while “awaiting a clutch engagement command.”

Plaintiff’s response, based on Dr. Caulfield’s 3/31/06 report, is that *Watanabe* is “similar to” prior art acknowledged in the ‘350 patent; that *Watanabe* does not teach “determining” an approach point that “is a separate and distinct point or condition from the touch point”; that *Watanabe* does not “store in memory or make any affirmative ‘determination’ of a second point”; and that *Watanabe* is “just like” prior art, a ‘981 patent to Braun, over which ‘350 was granted.

Summary judgment is not appropriate. There are material fact disputes about whether the “points” in *Watanabe* alleged by defendants to be “touch” and “approach” points are such points within the meaning of the claims *I.e.* whether the point in *Watanabe* alleged to be a “touch” point is a point of “incipient engagement” and “minimal” torque transfer; and whether the point in *Watanabe* alleged to be an “approach” point is “intermediate” a

properly-found “touch point” and full clutch disengagement. Thus invalidity is not established on this record by clear and convincing evidence.

46. Claims 2 and 3 of ‘350 are dependant from claim 1 (method) and claim 6 is dependant from claim 5 (apparatus). All of claims 2, 3 and 6 recite as a claim element an “input shaft retarding device” i.e. a shaft brake. Claim 2 is representative of this requirement:

2. The method of claim 1 wherein said transmission has a controllable input shaft retarding device associated therewith, said value determined while said device is inactive. (Emphasis supplied).

Defendants contend that claim 2 is invalid as anticipated by each of Tateno, Nakadani and Watanabe under 35 U.S.C. §102 and that claims 2, 3 and 6 are all invalid for obviousness under 35 U.S.C. §103 in view of the combination of Cote with any of Tateno, Nakadani and/or Watanabe. Defendants’ contention is rejected.

Dr. Davis’ declaration does not assert that any of Tateno, Nakadani or Watanabe teaches a “controllable input shaft retarding device” as required by the claims, but that they teach “determining an approach point . . . without activating an input shaft brake”. While the result of not “activating an input shaft brake” may be the same as not having such a brake, the claims expressly recite its presence and the law of anticipation is clear that every claim element must be present in single reference to prove anticipation. Thus claim 2 is not anticipated.

Furthermore, defendants fail to establish invalidity for obviousness of claims 2, 3 and 6. Dr. Caulfield's report raises fact issues regarding the obviousness of the presence, absence and operation of an input shaft retarding device which precludes summary judgment. (Caulfield rept. at pp.6-7)

Accordingly, defendants have failed to establish invalidity of claims 2, 3 and 6 by summary judgment under either 35 U.S.C. §§102 or 103.

47. Claim 9 which depends from claim 8 (method) recites as follows:

9. The method of claim 8 wherein step (c) further comprises, upon determining that clutch engagement is required, causing said clutch to move rapidly to the touch point condition thereof and then causing further clutch engagement in a controlled and modulated manner.

Defendants contend that claim 9 is invalid as anticipated by Cote or obvious in view of the combination of Cote, Tateno, Nakadani or Watanabe. Plaintiff contends that none of the references, alone or in combination, teach or suggest "going rapidly from the approach point condition to a touch point condition and then modulating" as required by the claim. Furthermore plaintiff contends that material fact issues regarding the validity of claim 8 makes summary judgment of claim 9 (dependant on claim 8) inappropriate.

Summary judgment of invalidity of claim 9 is not appropriate for the reasons contended above by plaintiff.

## CONCLUSIONS

The ‘279 patent

Plaintiff’s Motion for Summary Judgment of literal Infringement of claim 15 of the ‘279 patent by defendants’ original FreedomLine transmission is GRANTED. (¶¶ 4-16)

Defendants’ Motion for Summary Judgment of Non-Infringement of claims 15, 7 and 8 of the ‘279 patent by defendants’ redesigned FreedomLine transmission, literally or by equivalence, is GRANTED. (¶¶ 17-21)

Defendants’ Motion for Summary Judgment of Non-Infringement of claims 1 and 3 of the ‘279 patent by defendants’ redesigned FreedomLine transmission is DENIED. (¶¶ 22-23)

The ‘458 patent

Plaintiff’s Motion for Summary Judgment of literal Infringement of claims 1, 3-6, 12 and 14-17 of the ‘458 patent by defendants’ SureShift product is GRANTED. (¶¶ 24-29)

Defendants’ Motion for Summary Judgment of Invalidity of all asserted claims of the ‘458 patent is DENIED. (¶ 30)

Defendants’ Motion for Partial Summary Judgment of literal Non-Infringement of the ‘458 patent by its SmartShift product is GRANTED.

(¶ 31)

Defendants' Motion for Partial Summary Judgment of Non-Infringement of the '458 patent by equivalence by its SmartShift product is DENIED. (¶ 31)

The '350 patent

Plaintiff's Motion for Summary Judgment of literal Infringement of claims 1, 2, 8 and 9 of the '350 patent by defendant's FreedomLine transmission is DENIED. (¶¶ 32-38)

Defendants' Motion for Summary Judgment of Invalidity of claims 1, 5, 8 and 9 of the '350 patent is DENIED. (¶¶ 39-45, 47)

Defendants' Motion for Summary Judgment of Invalidity of claims 2, 3 and 6 of the '350 patent is DENIED. (¶¶ 46)

Respectfully submitted

/s/ James F. Davis

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James F. Davis  
Special Master

